



Traffic Signal and Lighting Standards

Elkhart County allows video and/or loop detection at signal installations. Dilemma zones (if the prevailing approach speed is greater than 40 mph) may also be managed by a radar system in addition to the other approved detection systems. Advanced detection is generally required on all approaches unless specifically waived by the Highway Department.

Each signal installation requires a battery backup system, LED signal indication modules (all colors), backplates on all signal heads, and pole-mounted supplementary signal heads. Signal heads and backplates shall be black aluminum or black polycarbonate. Polycarbonate heads shall only be used when securely supported on both ends. Backplates shall have a 2-inch yellow retroreflective strip around the perimeter. New signal systems shall be installed on mast arms unless otherwise approved by the Highway Department.

Signal cabinets shall be Modified Type 'R' Cabinets with doors on front and back, backplane moved forward 4" and eight 110v outlets mounted on the sidewall near the top. Cabinets shall come provided with all necessary equipment to function properly. All cabinets shall provide an Ethernet switch as specified below.

Roadway lighting shall be required on all new signal installations, with luminaires mounted on the signal poles. Roadway lighting shall not be connected to the battery backup system.

Loop detector housings shall be installed outside of the travel lanes in the shoulders or median if the lane is adjacent to one of these areas. Interior lane housings shall be installed in the center of the lane. All signal components shall be NEMA TS-2 compliant. Accessible pedestrian heads and push buttons are required where marked crosswalks exist, are planned, or pedestrian volumes warrant.

All permissive left turn phases shall be controlled by 4-section Flashing Yellow Arrow heads.

New signal installations shall include a PTZ camera that is capable of interfacing with the Highway Department's existing CCTV monitoring system.

Approved Equipment:

Controller:	Econolite Cobalt controller with color touch screen and Purdue high-resolution data logging enabled. Minimum 2GB SD Card.
Conflict Monitor:	Reno A&E MMU2-1600GE
Video Detection:	Thermal: FLIR thermal sensors for detection, processed by Autoscope RackVision Terra Video: Autoscope or Miovision detection systems may be used. Systems must be compatible with the Highway Department's existing monitoring system.



Loop Detectors:	Sawcut-installed Reno A&E PLB Preformed Loop
Loop Amplifier:	Reno A&E Model C-1203 with counting enabled
Load Switches:	Reno A&E LS-200
Advance Detection:	Autoscope Video (must be compatible with existing CCTV system), Wavetronix SmartSensor Advance, or Loop (see above). Multiple approach lanes must have individual lane-by-lane detection.
Pedestrian Head:	Current Lighting (GE) Model GTX LED 16"x18" with countdown module Model PS7-CFF1-VLA
Pedestrian Button:	Campbell Company Guardian APS (Not 400A or Mini)
Roadway Lighting:	Current Lighting: Evolve LED Roadway Luminaires Model No.: ERL2-0-23-B3-40-D-GRAY-A-T
Battery Backup:	Alpha FXM-HP-1100 with Alpha Remote Battery Monitoring System Plus. UPS and batteries housed in separate cabinet mounted on the side of the controller cabinet.
Conduit:	PVC meeting the requirements of NEMA TC-2, Type 2, Minimum diameter 3", no greater than 30% of the interior area filled by wiring. Advance detection may be via 2" PVC.
LED Modules	Must be Intertek-ETL certified to meet ITE specifications
Cabinet Ethernet Switch:	MOXA model EDS-G509-T with 2 SFP modules
Ethernet Radio:	Intuicom Axiom, 5.8 GHz Range, Integrated Panel Preferred
Decorative Light Pole:	Valmont FL-32 Pole Assembly with Luminaire Arm and Finial; 8-sharp fluted cross-section, Galvanized/Finish Painted Medium Bronze; With options: HH; AB; BAC; SKIRT
Decorative Light Luminaire:	Spring City Electrical Columbia LED Luminaire with Spun Aluminum Shade (ALMCLU-LE-YSLF-M6); 150 Watt; 4000K; Type III Distribution; Horizontal luminaire adapter; Finial to match pole; powder coat to match pole

Each lane of an approach shall have its own detection channel on the controller. Adjacent lanes of the same movement may not be configured as a single channel.

Six months after construction of any signal that is not a County funded project, the developer must submit a report comparing the turn movements logged by the controller vs. those manually counted during the same period. This information will be used to adjust signal timings to real traffic and to verify the operation and calibration of the required data logging function.



HIGHWAY

ELKHART COUNTY

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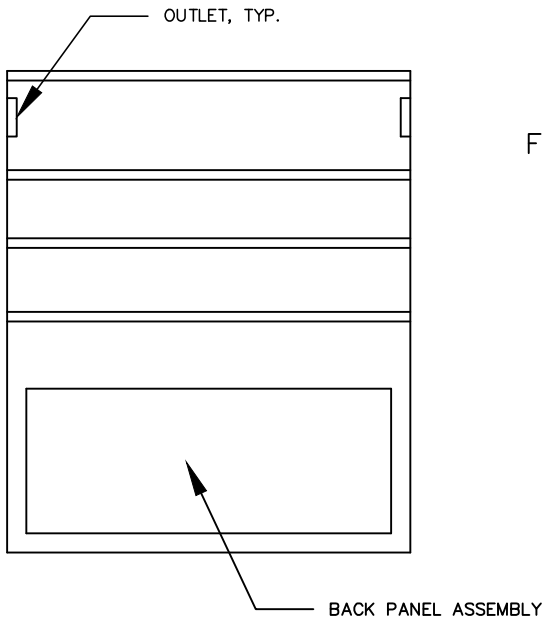
Reference the current INDOT standards for additional information or for items not described in these standards. More detailed specifications/model numbers can be provided upon request.

Signal installations shall provide fiber optic, Ethernet radio, or cell modem connections to the central management system. Contact the Highway Department to determine which connection type is appropriate for the intersection location and for specific requirements on equipment and standards.

(rev. 11/23)

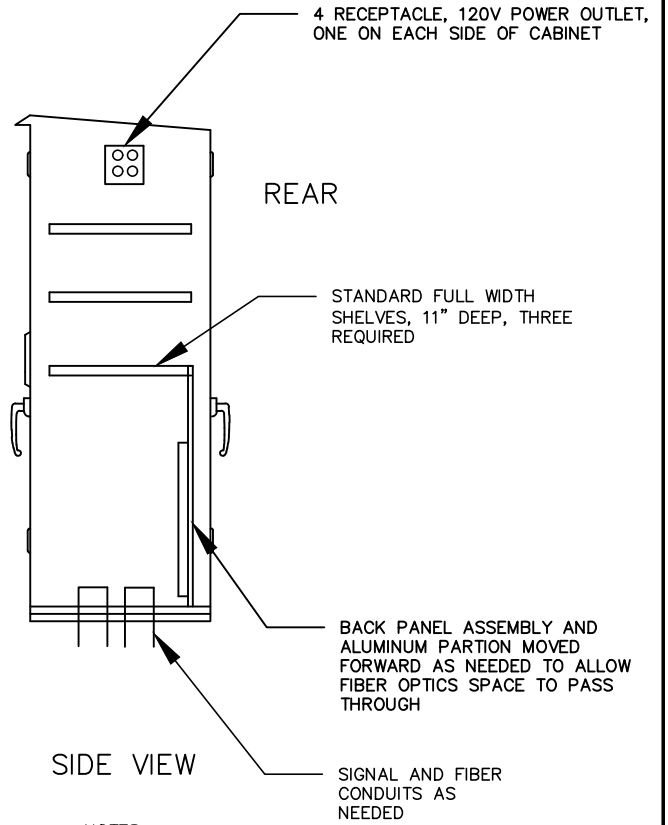
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FRONT VIEW

FRONT



SIDE VIEW

NOTES:

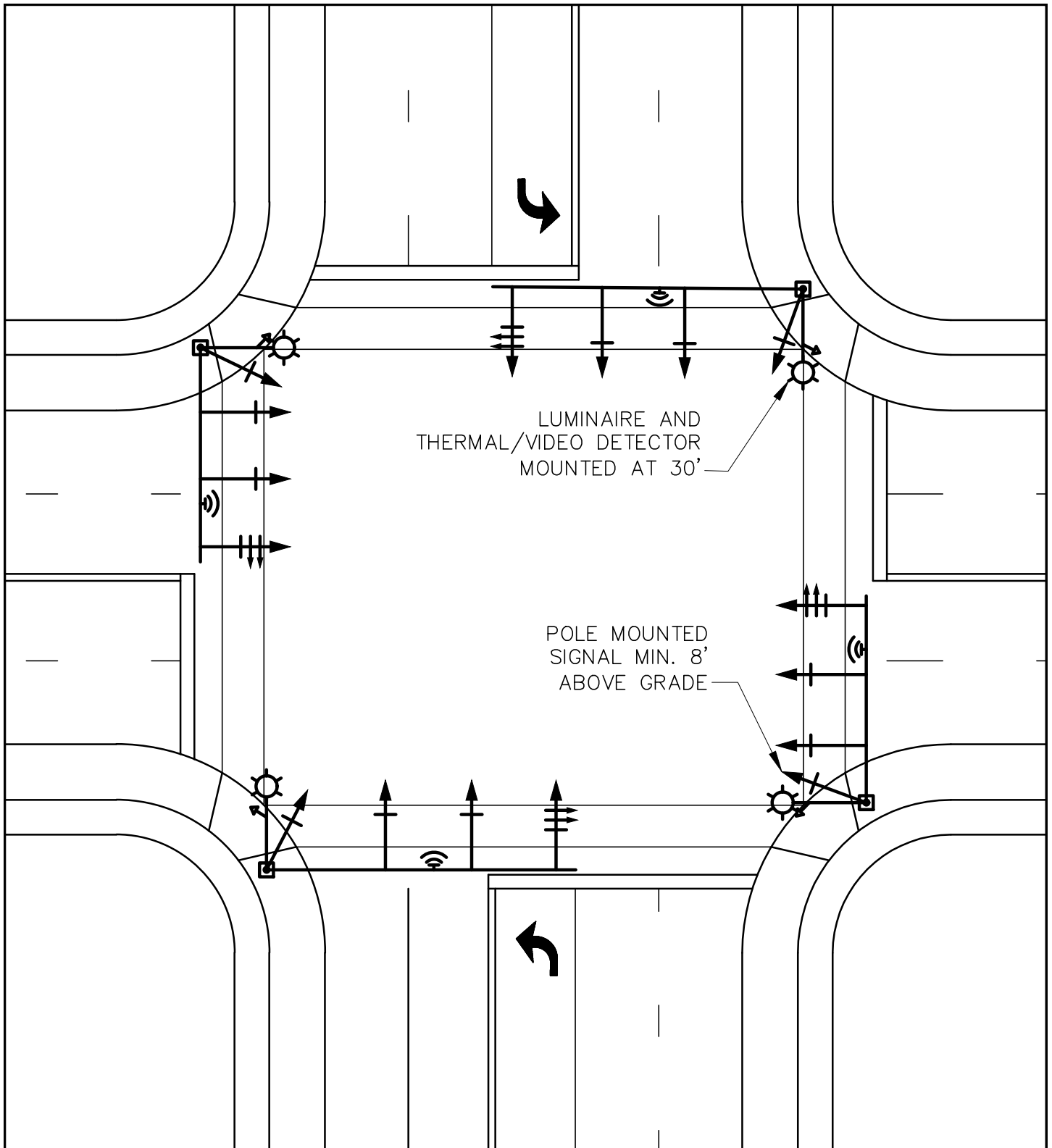
- FRONT DOOR HINGED ON RIGHT SIDE
- REAR DOOR HINGED ON LEFT SIDE
- BOTH DOORS PROVIDED WITH DOOR STOPS AT TOP AND BOTTOM
- ALUMINUM PARTION MOUNTED FORWARD OF REAR DOOR, BACK PANEL MOUNTED TO FRONT SIDE OF IT
- CABINET RAILS LOCATED ON BACK SIDE OF PARTITION FOR ADDITIONAL COMPONET MOUNTING ACCESSIBLE FROM REAR DOOR
- BACK PANEL SHALL BE NEMA TS2 TYPE 1 PLUG N' GO

MODIFIED TYPE 'R' CABINET



MODIFIED TYPE 'R' CABINET


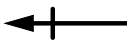



REV (6/11)



LUMINAIRE AND
THERMAL/VIDEO DETECTOR
MOUNTED AT 30'

POLE MOUNTED
SIGNAL MIN. 8'
ABOVE GRADE

LEGEND

-  4 SECTION FYA SIGNAL WITH BACKPLATE
-  3 SECTION SIGNAL WITH BACKPLATE
-  LUMINAIRE
-  SIGNAL POLE
-  THERMAL OR VIDEO DETECTOR



TYPICAL TRAFFIC SIGNAL INSTALLATION